



BROADSPAN[®]

MANUFACTURED BY  Georgia-Pacific

Broadspan Rim Board User's Guide

Design information for
rim board applications
in residential floor and
roof systems



Broadspan® Rim Board

A rim board is the member that fills the space between the sill plate and bottom plate of a wall or, in second floor construction, between the top plate and bottom plate of two wall sections. The rim board must match the depth of the framing members between floors or between the floor and foundation to function properly. In addition to supporting the wall loads, the rim board ties the floor joists together. It is an integral component in an engineered wood system because it transfers both lateral and vertical bearing forces.

While lumber has been the traditional product used for rim boards, it is not compatible with wood I-joists used in floor construction. With the increasing use of wood I-joists, a demand for compatible engineered wood rim boards has resulted.

Engineered wood rim boards can be manufactured using plywood, oriented strand board (OSB), glued laminated timber (glulam), or laminated veneer lumber (LVL). These rim boards have less shrinkage than lumber

and match the depth of wood I-joists and other engineered wood framing products. A lumber rim board can also have a greater tendency toward shape "memory", moving back towards its original shape in the log from which it was cut.

Approved Applications

Broadspan® Rim Board has been tested and approved as a rim board and starter joist by APA-EWS and meets all requirements of ICC-ES acceptance criteria AC-124, "Acceptance Criteria for Wood-Based Rim Board Products". Broadspan Rim Board can also be used as a short span, lightly loaded header (over windows, doors, and foundation vents) and to trim out staircase openings. The maximum header span is 4 feet. Broadspan Rim Board is not recommended as a structural joist, rafter, or ledger. For those applications or for longer spans, use Broadspan I-joist and LVL headers. Broadspan LVL may be substituted for Broadspan Rim Board in all rim board and rim joist applications shown in this User's Guide.

Capacities^a for Rim Board Applications

Grade	Meets or Exceeds	t ^b (in.)	H ^c (lbs/ft)	V ^d (lbs/ft)		Z ^e (lbs)	P ^f (lbs)
			Depth (d) Limitation (in.)				
Broadspan Rim Board	APA Rim Board	1	180	d ≤ 16	16 < d ≤ 24	d ≤ 24	d ≤ 24
Broadspan Rim Board Plus	APA Rim Board Plus	1½	200	d ≤ 16	16 < d ≤ 24	d ≤ 24	d ≤ 24

NOTES

- The design values apply only to rim applications and must not be used in the design of headers or other bending members. All values except H are for normal duration of load. V and P cannot be increased for duration of load.
- t = target thickness for grades listed
- H = horizontal (shear) load transfer capacity (160% load duration) based on attachment per this guide

d. V = bearing (vertical) load capacity which SHALL not be increased for duration of load

e. Z = lateral resistance of a ½" diameter lag screw or through bolt

f. P = concentrated load capacity which SHALL not be increased for duration of load (based on 4½" bearing length); the maximum concentrated load acting on any area of the floor sheathing above the rim board. V and P must simultaneously be satisfied. See Application Note 4 below for more information.

Standard Sizes

Referenced dimensions are nominal and are used for design purposes.

Dimensions	Standard Sizes ^a
Thickness (inches)	1, 1½
Depth (inches)	9¼, 9½, 11¼, 11½, 14, 16
Length (feet)	12

NOTES

- Check with Georgia-Pacific for availability of sizes.

Allowable Edgewise Bending Properties^a

F _b ^b (psi)	E ^c (psi)	F _v ^d (psi)	F _{c⊥} ^e (psi)
600	550,000	270	550

NOTES

- Table values are based on a maximum span of 4 feet (use Broadspan I-joist or LVL headers for longer spans) and 100% duration of load. E and F_{c⊥} shall not be increased for duration of load.

b. Allowable bending stress; volume effect adjustment is included in the value

c. Allowable apparent modulus of elasticity

d. Allowable shear stress

e. Allowable compressive stress perpendicular to grain

Application Notes

- Rim board spanning openings – allowed to a maximum span of 4 feet. See Allowable Uniform Load for Broadspan Rim Board Headers on page 32 of the Broadspan I-Joist Residential User's Guide (#582302).
- Rim board used as fire blocking panels – The minimum thickness of 1" for rim board exceeds the minimum requirement of 2⅜" published in the model building codes as long as the joints are backed by another rim board or a 2⅜" structural-use panel. See APA Form No. D350, *APA Rim Board in Fire Rated Assemblies*.
- Rim board used in applications where a high lateral load transfer capacity is required – When the applied lateral loads exceed the published horizontal load capacities of rim board, add a commercially available specialty connector made by connector manufacturers between the rim board and framing or sole plate. This type of connector is installed using face nailing into the rim board and has a typical lateral load capacity of 400 to 500 lbs per connector.
- Rim Board subjected to a combination of uniform and concentrated vertical loads – First, the applied concentrated load shall not exceed the concentrated load capacity (P) of the rim board, based on a minimum 4½" bearing length over the floor sheathing attached to the top of the rim board. Second, the applied

concentrated load shall be calculated as an equivalent uniform load based on the applied loading length increased by a 45° load distribution through decking and plate on both sides of the concentrated load, as applicable. The equivalent uniform load shall be added to the applied uniform load to determine the total applied uniform load, which shall not exceed the bearing (vertical) load capacity (V) of the rim board. If the total applied uniform load exceeds the bearing load capacity (V), use appropriate squash blocks, double rim boards, or a higher grade of rim board to carry the concentrated vertical load.

Example: A mechanical device distributes a weight of 3000 lbs for a distance of 12" along the top of a 1" x 16" Broadspan Rim Board through 2⅜" floor sheathing. In addition to the mechanical device the rim board carries a uniform load of 2000 lbs/ft.

Check:

(a) Concentrated vertical load, $P = 3000 \text{ lbs} < 3500 \text{ lbs} \Rightarrow \text{OK}$

(b) Equivalent uniform bearing load, $V = 3000 / [(12 + 2 * 2⅜) / 12] = 2680 \text{ lbs/ft}$.

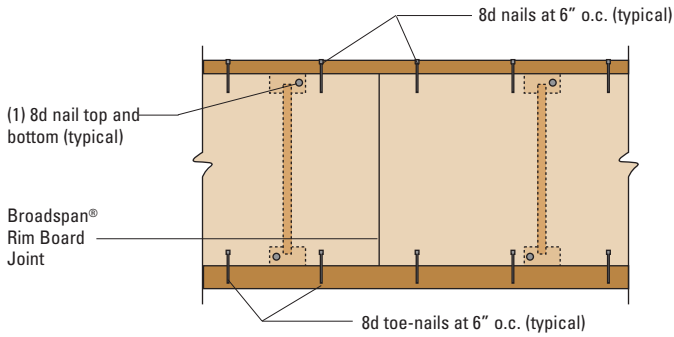
Total equivalent uniform bearing load = $2680 + 2000 = 4680 \text{ lbs/ft} > 3300 \text{ lbs/ft} \Rightarrow$ **NO GOOD** – So use 1½" Broadspan Rim Board Plus (4850 lbs/ft cap.), or double the 1" rim board or add squash blocks under the concentrated load area.

Rim Board Connection Requirements

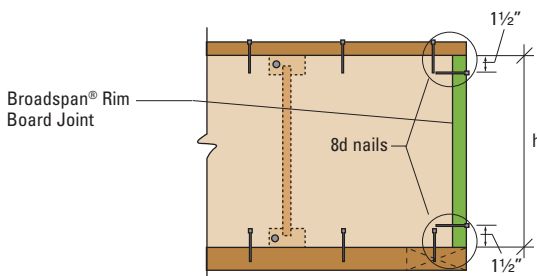
See page 32 of the Broadspan I-Joist Residential User's Guide for rim board headers and deck ledger fastener spacing.

Figure 1

ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



Rim Board Joint Between Floor Joists or When Used as Starter Joist

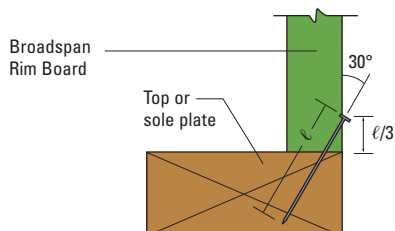


Rim Board Joint at Corner

1. Floor sheathing to rim board (see Figure 1) – Use 8d nails (box or common) at 6" o.c. CAUTION: The horizontal load capacity is not necessarily increased with a decreased nail spacing. Under no circumstances should the nail spacing be less than 3". The 16d (box or common) nails used to connect the bottom plate of a wall to the rim board through the sheathing do not reduce the horizontal load capacity of the rim board provided that the 8d nail spacing (sheathing-rim board) is 6" o.c. and the 16d nail spacing (bottom plate-sheathing-rim board) is in accordance with the prescriptive requirements of the applicable code.
2. Rim board to I-joist (see Figure 1) – Use two 8d nails (box or common), one each into the top and bottom flanges. This is typical for rim board having a thickness up to 1 1/8". A larger nail size may be required for a given I-joist or for thicker rim board products.
3. Rim board to sill plate (see Figure 2) – Toe-nail using 8d (box or common) at 6" o.c.

Figure 2

TOE-NAIL CONNECTION AT RIM BOARD



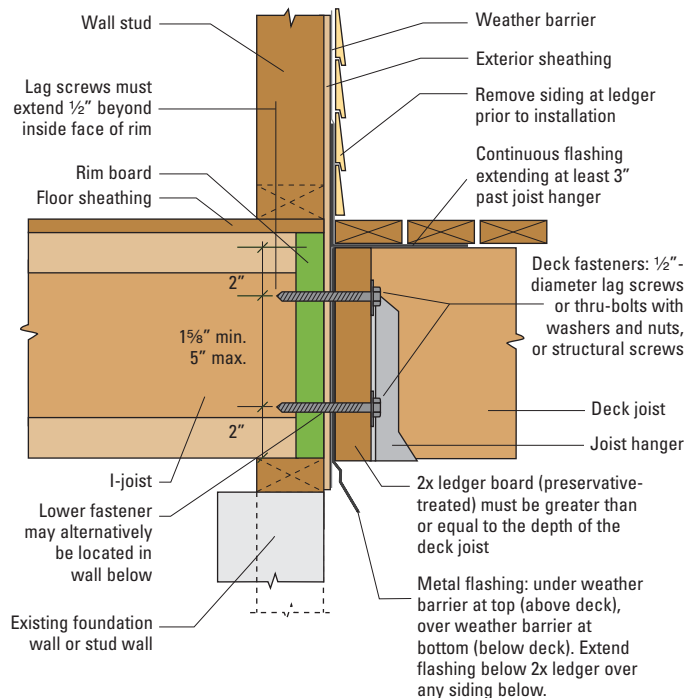
4. Attachment of 2x lumber ledgers to rim board (see Figure 3) – Fasteners must be compatible with the code criteria for the type of preservative treatment. Use 1/2" diameter through-bolts with washers and nuts, 1/2" diameter lag screws with tip extending a minimum of 1/2" beyond rim board, or structural screws. For each bolt and/or lag screw, use a design value of 300 lbs into 1" thick rim and 350 lbs into 1 1/8" thick rim. CAUTION: The lag screw should be inserted in a lead hole by turning with a wrench, not by driving with a hammer. Over-torquing can significantly reduce the lateral resistance of the lag screw and should therefore be avoided. See the 2005 National Design Specification for Wood Construction (NDS) published by the American Forest & Paper Association for the appropriate size of clearance and lead holes.
5. Lateral resistance of nails applied to the faces of rim board – Calculate the lateral nail resistance based on the procedures given in the 2005 NDS and the following guidelines:

If the rim board is:

- (a) Broadspan Rim Board - use an equivalent specific gravity, SG = 0.50.
- (b) APA Rim Board with fastener information unavailable - use an equivalent specific gravity, SG = 0.42.

Figure 3

2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



Fill holes and seal flashing with high quality caulk.



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